

EXECUTIVE SUMMARY

Introduction

The *Lower East Coast Regional Water Supply Plan* (LEC Plan) provides a blueprint to help meet the water resource needs of a rapidly growing South Florida between now and 2020. Technical analyses of this area's future water needs and the availability of water supplies indicate that extensive actions are required to ensure that a sustainable water supply is available to fulfill future urban, agricultural, and natural systems water needs. The actions recommended in this plan will meet these needs. Analyses show that the recommended projects must be built on schedule or the region will face a significant increase in the risk of water shortages and environmental decline.

The Lower East Coast (LEC) Planning Area is expected to experience substantial growth between now and 2020, increasing by almost 58 percent from 1995. Most of this increase in population will occur in the coastal area, which is projected to have almost seven million residents in 2020. This growth will create additional water demands for potable and irrigation water. Agricultural water demand, primarily for irrigation of row crops, ornamental horticulture, and sugarcane, is projected to decrease by seven percent reflecting a reduction in the area cultivated to approximately 480,000 acres. The overall water demands of consumptive users is projected to increase by 20 percent, to 2.52 billion gallons per day on average. In addition, significant increases in water supply deliveries will be needed to sustain and restore the natural systems of South Florida.

Development of proactive water resource and water supply development projects is imperative to both meet water demands and restore critical ecosystems in the coastal estuaries, Lake Okeechobee, the Everglades, and the Biscayne Bay. The South Florida Water Management District (District) is primarily responsible for water resource development. Local governments, water users, and water utilities are primarily responsible for implementing water supply development. When appropriate, and resources are available, the District will also assist water supply development efforts at the local level.

Purpose

The purpose of this plan is to fulfill the requirements of Section 373.0361, Florida Statutes (F.S.), for regional water supply plans. Implementing this plan, which complies with the statutory requirements, will ensure significant benefits to the people in South Florida and the natural systems by providing guidance, funding, and resources needed to develop regional and local water supplies.

Achievements

Implementation of the LEC Plan will do the following:

- Create a water supply that fully meets the future (2020) needs of almost seven million people, agriculture and industries during a 1-in-10 year drought
- Reduce the number and severity of violations of Minimum Flow and Levels (MFL) criteria for the Everglades, Lake Okeechobee, and the Biscayne aquifer by 2020
- Reserve from allocations sufficient water to allow for the restoration of the Everglades and enhancement of other significant natural systems
- Reduce the uncertainty for issuing long-term permits for water users as they invest in tomorrow's water supply infrastructure
- Provide public forums to modernize District operational procedures and promote greater flexibility in the operation of the regional water management system

Relationship with Comprehensive Everglades Restoration Plan

In 1997, the District merged its LEC regional water supply analyses of major water storage facilities into the Central and Southern Florida Project Comprehensive Review (Restudy) process. The Restudy was a multiyear planning effort by the U.S. Army Corps of Engineers and the District, which was completed in April 1999 with publication of the *Central and Southern Florida Comprehensive Review Study Final Feasibility Report and Programmatic Environmental Impact Statement*. The water supply planning efforts completed from 1992 to 1997 for the LEC Plan provided the foundation, in the form of analytical tools, evaluation techniques, and storage projects for the Restudy. The Restudy is being refined and implemented through the Comprehensive Everglades Restoration Plan (CERP). This LEC Plan incorporates the CERP construction and operational features into the state planning process to determine how much water can be made available from the regional system through the state regulatory program. The water supply planning process also verified that the sequencing of proposed Restudy components at five-year increments through 2020 would protect existing legal water users, protect water resources from significant harm, and balance the future water needs of the region. The LEC Plan also identified improvements to that should be considered as the CERP moves forward.

Statutory Requirements

The LEC Plan integrates the federal water management process (CERP) into the state process, described in Section 373.0361, F.S., and other pertinent sections of Chapter 373, F.S., by including the following:

- Analyses based on at least a 20-year planning period
- Estimated water supply demands for all existing and future users and the environment up to a 1-in-10 year level of certainty
- Water resource development projects, implementation schedules, costs, and funding strategies
- Descriptions of water supply development options, their effectiveness, and estimated cost to implement
- Minimum Flows and Levels (MFL) recovery and prevention strategies for four priority water bodies and recommendations for development of MFLs for other water bodies
- Technical data and information to support the plan

Process

This planning document is the product of a public process, which relied heavily on an advisory committee representing federal, state, tribal, agricultural, urban, and environmental interests. The LEC Regional Water Supply Plan Advisory Committee was initiated in 1992. The committee participated in development of both the *Interim Plan for Lower East Coast Water Supply* (LEC Interim Plan) (SFWMD, 1998b) and this 20-year plan.

Two existing hydrologic models, the South Florida Water Management Model and the Natural System Model, and five recently developed, high resolution, ground water models were applied to analyze how the hydrology of South Florida performs under future conditions. Projections for urban and agricultural water demands and sources were incorporated, as well as future land use projections, construction of water management features, such as the Everglades Construction Project, and operational features, such as the Water Supply and Environmental schedule for Lake Okeechobee. Performance measures were applied to evaluate the computer simulations. The performance measures relate to the goals of the plan, provide water to meet a 1-in-10 year level of certainty, and provide for hydrologic restoration of the Everglades through 2020.

Other planning efforts are linked to the LEC Plan and are important to meeting its objectives. Three District plans, the *Lower West Coast Water Supply Plan* (SFWMD, 2000b), the *Kissimmee Basin Water Supply Plan* (SFWMD, 2000c), and the *Caloosahatchee Water Management Plan* (CWMP) (SFWMD, 2000d) were approved by the Governing Board in April 2000. Two federal planning projects, the Water Preserve Areas and Southwest Florida feasibility studies, are under way. These other efforts were integrated to the greatest degree possible with the LEC planning process. The *Caloosahatchee Water Management Plan* evaluated water supply in an area linked to the LEC Planning Area by virtue of its dependence on Lake Okeechobee. Its recommendations are included as part of the LEC Plan. Additional integration of the plan will occur as part of related implementation efforts or as water supply plans are

periodically updated. This plan will be reviewed and updated at least every five years to ensure that future water needs of LEC Planning Area continue to be met.

Conclusions of Analysis

It was concluded that construction and implementation of the CERP components and appropriate management and diversification of water supply sources will ensure sufficient water to meet the needs of the LEC Planning Area up to and including a 1-in-10 year drought condition. Urban areas may reach a 1-in-10 year level of certainty by 2010. Agricultural users that depend on Lake Okeechobee may reach a 1-in-10 year level of certainty by 2015 if the construction and operational features in the LEC Plan are implemented. The proposed MFLs will also be achieved in Lake Okeechobee, the Everglades, and the Biscayne aquifer by 2020. Also, a majority of restoration targets for the Everglades can be met by 2020 if this plan is implemented, although CERP features will not be fully implemented until 2037.

Recommendations for Water Resource Development

The LEC Plan recommends water resource development projects and lists water supply development options available to public and private water suppliers. The primary water resource development projects will be completed as part of the CERP. The District and local sponsor costs for the first five years of implementation are expected to be \$922,491,000 and the 20-year costs are estimated at \$3,395,470,000. The recommendations fall into eight categories which are listed in **Table 1** along with the District and local five-year and 20-year costs.

Table 1. Summary of District Five-Year and 20-Year Costs of the Water Resource Development Projects Recommended in the LEC Plan.

Category	Five-Year Cost (FY2001-FY2005)	20-Year Cost ^a (FY2001-FY2020)
Ongoing projects from the LEC Interim Plan	\$19,509,000	\$33,789,000
Other federal, state, and District projects	\$4,245,000	\$4,245,000
CERP projects	\$893,417,000	\$3,352,116,000
Operational recommendations	\$750,000	\$750,000
Consumptive Use Permitting and Resource Protection Projects	\$1,920,000	\$1,920,000
Other Water Resource Development Project	\$2,650,000	\$2,650,000
TOTAL	\$922,491,000	\$3,395,470,000

a. 20-year costs may be updated in the 2005 Update to the LEC Plan

Implementation of the CERP is critical to meeting the state mandates to achieve a 1-in-10 year level of certainty, provide MFLs, and meet restoration targets for natural systems. Implementation of the LEC Plan, in conjunction with the CERP, the CWMP, and the Southwest Florida Study, should avert water shortages and harm to the environment

during a 1-in-10 year drought. However, successful implementation of the LEC Plan is dependent on completing the rule development for MFLs, reservations of water for the environment, and consumptive use permits.

The CWMP determined that projected surface water needs of the Caloosahatchee River basin and estuary can be met based on recommended water management and storage infrastructure that effectively capture and store surface water flows in the basin. The CWMP recommendations for modifications to demand projection methodology, the Aquifer Storage and Recovery (ASR) Pilot Project, and the C-43 Storage Project will be referred to the CERP and the Southwest Florida Study. As in the LEC Planning Area, meeting the 1-in-10 year level of certainty for the Caloosahatchee Basin depends on completing the CERP projects.

Recommendations for Water Supply Development

Use of the traditional source for public water, the Surficial Aquifer System, can be expanded with completion of proposed water resource development projects and more efficient use of regional and local water supplies. The Surficial Aquifer System is limited in some areas due to increased potential for impacts on wetland systems and for saltwater intrusion in coastal areas in the vicinity of public water supply wellfields. Coastal areas with limited access to regional water are more likely to require implementation of the water supply development options described in the LEC Plan.

Eight water source options were identified to address water supply needs of the LEC Planning Area. These options either make additional water available from historically used sources or other sources, or provide additional management through conservation and storage of water. The options are as follows (no implied priority):

- Conservation
- Surficial Aquifer System
- Floridan Aquifer System
- Reclaimed Water
- Seawater
- ASR
- Reservoirs
- Surface Water

Strong emphasis is placed on implementation of a comprehensive water conservation program. Conservation will be encouraged through cooperative efforts among water users, utilities, local governments, and the District. These efforts will incorporate many initiatives, including continued development and compliance with water conservation ordinances, development and implementation of public education programs, use of alternative water sources, continued emphasis on water conservation in the District's surface water and consumptive use permitting programs, and other means. Local governments and users will play a key role in making these strategies a success, through adoption of conservation ordinances, homeowner awareness programs, land use decisions, and development of water supply options by local governments, utilities, and water users.

The Floridan aquifer appears to be a promising source for additional potable water in areas with limited access to regional supplies, but little is known about long-term water quality impacts of sustained withdrawals from this aquifer. As a result, the District is currently refining the Floridan aquifer ground water model and the Floridan aquifer water quality and water level monitoring networks. Several public water utilities already use reverse osmosis technology to remove salt from the saline water in the Floridan aquifer.

From a regional perspective, the use of ground water sources, reclaimed water, surface water, and storage through development of a regional or subregional irrigation water distribution system(s) will be sufficient to meet the urban and irrigation demands. Water from the Surficial Aquifer System and reclaimed water have been used historically to meet such demands. However, in some areas of the LEC Planning Area, these sources will need to be augmented. The feasibility of developing a regional irrigation water distribution system using reclaimed water is being considered in northern Palm Beach County.

In the southeastern portion of the LEC Planning Area, it was concluded that existing surficial aquifer and Floridan aquifer system ground water sources are sufficient to meet the 2020 projected urban demands with minimal potential impacts. Some modifications to wellfield configurations and well operations will be needed at the local level to meet a 1-in-10 year level of certainty and avoid potential impacts to water resources and other existing legal users.

Improved management of surface water through storage could increase freshwater availability in the region and reduce potential impacts resulting from water use. ASR technology shows promise both for treated and untreated water by providing capacity to capture and store excess water when it is available. This technology is currently being used by several utilities at the local level. In addition to continued use and development at the local level, application of ASR on a regional scale has been identified as an option to capture excess surface water in several basins including Lake Okeechobee. Regional and local retention projects will reduce excess water discharged to estuarine systems and increase water availability inland by increasing water levels in canals and providing additional ground water recharge.